REMARKS

The present application is an application for reissue of U.S. Patent No. 6,323,497, granted on November 27, 2001. By this Amendment, claim 2 is amended, claim 10 is cancelled and new claims 16-43 are added No new matter has been added. Claims 1-9 and 11-43 are now pending in the present application.

The chart below indicates changes made to the claims and support in U.S. Patent 6,323,497 for the changes.

Claim	**Status**	**Added/Changed Claim Feature**	**Example of Support in U.S. 6,323,497**
1	Pending	None	
2	Pending	along an ion beam path a difference value determined from an ion beam current reference value, which corresponds to an ion beam current in the absence of vacuum fluctuations along the ion beam path measured in the presence of vacuum fluctuations along the ion beam path	Original claim 2 recites an "ion beam path"; this amendment provides more clear antecedent basis for this claim feature. This feature is found in original claim 10, which is cancelled. This feature is found in original claim 10, which is cancelled.
3	Pending	None	
4	Pending	None	
5	Pending	None	
6	Pending	None	
7	Pending	None	
8	Pending	None	
9	Pending	None	
10	Cancelled		
11	Pending	None	
12	Pending	None	
13	Pending	None	
14	Pending	None	
15	Pending	None	

16	Pending	Entire claim new. a beam generator that generates an energetic ion beam and directs the ion beam toward a semiconductor workpiece detector that detects an ion beam current a controller that receives signals from the detector representative of a detected ion beam current, and controls at least one ion implantation parameter to compensate for vacuum fluctuation during implantation based on a difference value determined from an ion beam current reference value, which corresponds to an ion beam current in the absence of vacuum fluctuations along an ion beam path, and the detected ion beam current	This feature is found in original claim 2. This feature is found in original claim 2. This feature is found in original claim 2. Support for this feature may be found at col. 6, lines 18-22 and col. 11, lines 27-37 and 52-59.
17	Pending	the controller controls the at least one ion implantation parameter based on the difference value and not based on a detected pressure	Support may be found in original claim 1 and col. 2, lines 16-31.
18	Pending	the controller scales the difference value to account for non-line of sight and line of sight charge exchanging collisions experienced by ions in the ion beam along the ion beam path	This feature is found in original claim 3.

19	Pending	wherein the difference value is scaled based on a ratio of line of sight collisions to non-line of sight collisions	This feature is found in original claim 4.
20	Pending	a vacuum system, and wherein the controller controls the vacuum system to begin evacuation based on the determined difference value	This feature is found in original claim 5.
21	Pending	wherein the detector is a Faraday cup positioned adjacent a semiconductor wafer	This feature is found in original claim 6.
22	Pending	wherein the beam generator includes an angle corrector magnet	This feature is found in original claim 7.
23	Pending	the ion beam current reference value is determined based on an ion beam current measured while a vacuum level along the ion beam path is stable	This feature is found in original claim 8.
24	Pending	the ion beam current reference value is retrieved by the controller from a memory	This feature is found in original claim 9.
25	Pending	the controller adjusts an ion implantation parameter to adjust for semiconductor workpiece dosing non-uniformity in two dimensions	This feature is found in original claim 11.
26	Pending	the at least one ion implantation parameter includes one of a wafer scan rate and a beam scan rate	This feature is found in original claim 12.
27	Pending	the controller determines an adjusted difference value using a scale factor and the difference value,	Support for this feature may be found at col. 9, lines 51-55.

		and uses the adjusted difference value to control the at least one ion implantation parameter	
28	Pending	the controller controls the at least one ion implantation parameter based on the difference value and a scale factor that is mathematically derived by modeling the implantation system	This feature is found in original claim 14.
29	Pending	the controller uses a scale factor that has been determined based on calculated beam path length*neutral particle density products that are obtained, at least in part, from a model of an ion beam path and a vacuum system in the implantation system	This feature is found in original claim 15.
30	Pending	Entire claim new. a beam generator that generates an energetic ion beam and directs the ion beam along an ion beam path toward a semiconductor workpiece, the ion beam path being non-linear; a detector that detects an ion beam current; and a controller that receives signals from the detector representative of a detected ion beam current, and controls at least one ion implantation parameter based on the detected ion beam current and a ratio	This feature is found in original claim 2. The feature that the ion beam path is non-linear may be found in Figs. 2 and 3 and col. 4, lines 56-62. This feature is found in original claim 2. Support for this feature may be found at col. 6, lines 18-56 and col. 9, line 35 to col. 10, line 33.

		of line of sight to non-line of sight collisions between particles in the ion beam and other particles along the ion beam path to compensate for vacuum fluctuation during implantation.	
31	Pending	the means for adjusting determines a difference value between the ion beam current reference value, which corresponds to an ion beam current in the absence of vacuum fluctuations along an ion beam path, and the measured ion beam current	This feature is found in original claim 10.
32	Pending	the means for adjusting scales the difference value to account for non-line of sight and line of sight charge exchanging collisions experienced by ions in the ion beam along the ion beam path	This feature is found in original claim 3.
33	Pending	the means for adjusting controls the at least one ion implantation parameter based on the difference value and a scale factor that is mathematically derived by modeling at least a portion of the implantation system	Support for this feature may be found at col. 9, line 44 to col. 10, line 7.
34	Pending	the means for adjusting uses a scale factor that has been determined based on calculated beam path length*neutral particle density products that are obtained, at least in part, from a model of an ion beam path and a	This feature is found in original claim 15.

		vacuum system in the implantation system	
35	Pending	the means for adjusting adjusts the ion implantation parameter based on a ratio of line of sight collisions to non-line of sight collisions experienced by ions in the ion beam along the ion beam path	This feature is found in original claim 4.
36	Pending	further comprising a vacuum system, and wherein the means for adjusting controls the vacuum system to begin evacuation based on the determined difference value	This feature is found in original claim 5.
37	Pending	the means for measuring includes a Faraday cup positioned adjacent a semiconductor workpiece	This feature is found in original claim 6.
38	Pending	the means for generating includes an angle corrector magnet	This feature is found in original claim 7.
39	Pending	the ion beam current reference value is determined based on an ion beam current measured while a vacuum level along an ion beam path is stable	This feature is found in original claim 8.
40	Pending	wherein the means for determining retrieves the ion beam current reference value from a memory	This feature is found in original claim 9.
41	Pending	the means for adjusting detects a vacuum fluctuation based on a difference value determined from an ion beam current reference value, which is an ion beam current measured	This feature is found in original claim 10.

		in the absence of vacuum fluctuations along an ion beam path, and an ion beam current measured in the presence of vacuum fluctuations along the ion beam path	
42	Pending	the means for adjusting adjusts an ion implantation parameter to adjust for wafer dosing non-uniformity in two dimensions	This feature is found in original claim 11.
43	Pending	the at least one ion implantation parameter includes one of a wafer scan rate and a beam scan rate	This feature is found in original claim 12.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that the claims presented in this amendment are in condition for allowance. If the examiner believes there is anything further required that would place the application in better condition for allowance, the examiner is invited to contact the Applicant's undersigned representative at the telephone number listed below.

Please charge any fee or any fee deficiency occasioned by this preliminary amendment to Deposit Account No. 50-0896.

Respectfully submitted,

Robert E. Hunt, Reg. No. 39,231
William R. McClellan, Reg. No. 29,409
WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, MA 02210
Tel. (617)720-3500

Docket No.: V00077.70221.US
Dated: June 24, 2003
XNDD